

Ammonium nitrate

Other names:	ammonium nitrate [AN] nitric acid ammonium salt
Inchi:	InChI=1S/H4N2O3/c1-5-2(3)4/h1H4
InchiKey:	ASFXIDPWCNUKTK-UHFFFAOYSA-N
Formula:	H4N2O3
SMILES:	NO[N+](=O)[O-]
Mol. weight [g/mol]:	80.04
CAS:	6484-52-2

Physical Properties

Property code	Value	Unit	Source
gf	-53.88	kJ/mol	Joback Method
hf	-152.52	kJ/mol	Joback Method
hfus	13.50	kJ/mol	Joback Method
hsub	174.90	kJ/mol	NIST Webbook
hvap	45.24	kJ/mol	Joback Method
log10ws	-0.41		Crippen Method
logp	-0.932		Crippen Method
mcvol	44.130	ml/mol	McGowan Method
pc	7355.34	kPa	Joback Method
tb	446.19	K	Joback Method
tc	677.44	K	Joback Method
tf	338.86	K	Joback Method
tt	324.15	K	Influence of selected potassium salts on thermal stability of ammonium nitrate
vc	0.165	m3/kmol	Joback Method

Temperature Dependent Properties

Property code	Value	Unit	Temperature [K]	Source
cpg	85.28	J/mol×K	446.19	Joback Method
cpg	88.79	J/mol×K	484.73	Joback Method
cpg	92.19	J/mol×K	523.27	Joback Method

cpg	95.46	J/mol×K	561.82	Joback Method
cpg	98.59	J/mol×K	600.36	Joback Method
cpg	101.57	J/mol×K	638.90	Joback Method
cpg	104.40	J/mol×K	677.44	Joback Method
hsubt	178.70	kJ/mol	393.50	NIST Webbook
psub	5.62e-05	kPa	330.60	The vaporization of NH ₄ NO ₃
psub	1.12e-05	kPa	315.50	The vaporization of NH ₄ NO ₃
psub	1.79e-05	kPa	320.80	The vaporization of NH ₄ NO ₃
psub	2.11e-05	kPa	321.80	The vaporization of NH ₄ NO ₃
psub	2.14e-05	kPa	322.10	The vaporization of NH ₄ NO ₃
psub	3.82e-05	kPa	327.50	The vaporization of NH ₄ NO ₃
psub	8.07e-06	kPa	313.20	The vaporization of NH ₄ NO ₃
psub	6.05e-05	kPa	332.10	The vaporization of NH ₄ NO ₃
psub	7.83e-05	kPa	333.90	The vaporization of NH ₄ NO ₃
psub	7.82e-05	kPa	334.20	The vaporization of NH ₄ NO ₃
psub	1.05e-04	kPa	335.80	The vaporization of NH ₄ NO ₃
psub	1.39e-04	kPa	340.20	The vaporization of NH ₄ NO ₃
psub	1.60e-04	kPa	341.40	The vaporization of NH ₄ NO ₃
psub	1.79e-04	kPa	342.60	The vaporization of NH ₄ NO ₃
psub	2.18e-04	kPa	344.60	The vaporization of NH ₄ NO ₃
psub	2.33e-04	kPa	344.80	The vaporization of NH ₄ NO ₃
psub	2.40e-04	kPa	345.70	The vaporization of NH ₄ NO ₃
psub	2.62e-04	kPa	345.90	The vaporization of NH ₄ NO ₃
psub	2.56e-04	kPa	346.50	The vaporization of NH ₄ NO ₃
psub	2.57e-04	kPa	346.50	The vaporization of NH ₄ NO ₃
psub	2.66e-04	kPa	347.10	The vaporization of NH ₄ NO ₃

Sources

Influence of selected potassium salts on thermal stability of ammonium nitrate, Viscosities and Adiabatic Compressibilities of Some Mineral Salts in Water Study Differ KNO ₃ + NH ₄ NO ₃ +H ₂ O System at Temperatures from 293.15 to 323.15 K:	https://www.doi.org/10.1016/j.tca.2019.178313 https://www.doi.org/10.1021/je030205y https://www.doi.org/10.1021/acs.jced.8b01052 https://www.chemeo.com/doc/models/crippen_log10ws
Phase Equilibria of the Na ⁺ , NH ₄ ⁺ /SO ₄ ²⁻ , NO ₃ ⁻ -H ₂ O Quaternary Stability and Thermodynamics of Thermochromic Cobalt(II) Chloride Complex Conducting Molar Density of (NH ₄) ₂ [CoCl ₄]·H ₂ O, NH ₄ NO ₃ + H ₂ O, and (NH ₄) ₂ SO ₄ + NH ₄ NO ₃ Concentration Solutions Dependencies of the Electric Conductivity of Dimethyl Sulfoxide with additives in the Temperature Range of 298.0 to 340.0 K: Experimental data and results of thermodynamic Stability of Ammonium Nitrate + Formamide Mixtures: The vaporization of NH ₄ NO ₃ :	https://www.doi.org/10.1021/acs.jced.7b01015 https://www.doi.org/10.1021/je9009267 https://www.doi.org/10.1021/je201390r https://www.doi.org/10.1021/je400402n https://www.doi.org/10.1016/j.fluid.2016.12.003 http://link.springer.com/article/10.1007/BF02311772 https://www.doi.org/10.1021/je500284p https://www.doi.org/10.1016/j.jct.2010.01.012 https://en.wikipedia.org/wiki/Joback_method
Electrostriction of water and lower alcohols around ammonium nitrate - Volumetric properties of ammonium nitrate in N,N-dimethylformamide: Water activity and activity coefficients of the mixed electrolytes {yNH ₄ Cl + Ethanol} Conductivity 298.15 K Phase Transitions of Calcium Nitrate + Ammonium Nitrate + Water Mixtures:	https://www.doi.org/10.1016/j.jct.2018.05.018 https://www.doi.org/10.1016/j.jct.2012.04.001 https://www.doi.org/10.1016/j.fluid.2005.07.011 https://www.doi.org/10.1021/je900927a http://pubs.acs.org/doi/abs/10.1021/ci990307l http://webbook.nist.gov/cgi/cbook.cgi?ID=C6484522&Units=SI https://www.doi.org/10.1021/je3008233
NIST Webbook:	

Legend

cpg:	Ideal gas heat capacity
gf:	Standard Gibbs free energy of formation
hf:	Enthalpy of formation at standard conditions
hfus:	Enthalpy of fusion at standard conditions
hsub:	Enthalpy of sublimation at standard conditions
hsult:	Enthalpy of sublimation at a given temperature
hvap:	Enthalpy of vaporization at standard conditions
log10ws:	Log10 of Water solubility in mol/l
logp:	Octanol/Water partition coefficient
mcvol:	McGowan's characteristic volume
pc:	Critical Pressure
psub:	Sublimation pressure
tb:	Normal Boiling Point Temperature
tc:	Critical Temperature

tf: Normal melting (fusion) point

tt: Triple Point Temperature

vc: Critical Volume

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